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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO. <i>AK</i>
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09/089.698 06/03/98 SPITZ

D LE9-97-123

EXAMINER

MM92/0809

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ART UNIT PAPER NUMBER

2853
DATE MAILED:

08/09/00 *# 9*

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/089,698

Applicant(s)

SPITZ ET AL.

Examiner

Michael S. Brooke

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964) and Hara et al. (4,296,421).

Braun et al. teaches (fig. 3A) an ink jet cartridge comprising a fluid block (50) which has a recess configured to receive a chip (60). Each of the recesses has ink supply passages (53, 54) formed therein. As can be seen in the figures, the block has a top surface and side walls attaches to the top surface. Braun is silent as to the material with which the fluid block is made. While Braun does not teach the substrate holder being formed integrally with ink reservoir (3), it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the ink reservoir integrally with the substrate holder, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together requires only routine skill in the art (Howard v. Detroit Stove Works, 150 U.S. 164 (1893)).

Braun teaches the claimed invention with the exception of the side walls having fins, a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns.

It is well known in the ink jet art to use a layer of silicon dioxide ink an ink jet print head for the purpose of providing a protective layer. Furthermore, no criticality has been disclosed for the claimed thickness range. Therefore, it would have been obvious to one of ordinary skill in the art to provide a silicon dioxide layer having a thickness of between 0.1 to 2.5 microns for the purpose of providing a protective layer.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the fluid block taught in Braun from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

Hara et al. discloses an ink jet print head containing a heating resistor (142) mounted on a substrate. A heat discharging fin (148) is located on a side of the print head for the purpose of convectively removing heat from the print head which was generated by the heating resistor (col. 35, lines 39-57). This would suggest to one of ordinary skill in the art that a heat discharge fin could be attached to the fluid block of Braun, as modified, for the purpose of improving heat discharge efficiency as taught by Hara et al.

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3. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964) and Hara et al. (4,296,421), as applied to claims 1-5 and 10-12 above, and further in view of Wenzel et al. (5,426,458).

Braun, as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964) and Hara et al. (4,296,421), as applied to claims 1-5 and 10-12 above, and further in view of Drake et al. (5,079,189).

Braun, as modified, discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, a substrate holder comprising graphite for the purpose of cooling the substrate.

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5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964) and Hara et al. (4,296,421), as applied to claims 1-5 and 10-12 above, and further in view of Cook (5,834,689).

Braun, as modified, discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Braun that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head. Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Braun a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964) and Hara et al. (4,296,421), as applied to claims 1-5 and 10-12 above, and further in view of Ta et al. (4,755,836).

Braun, as modified, teaches the claimed invention with the exception of carriage positioning devices positioned adjacent the side walls of the substrate holder.

Ta et al. teaches an ink jet cartridge having a plurality of lands (74, 78, 80) for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al.

7. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Keefe et al. (5,278,584).

Braun, as modified, teaches the claimed invention, as disclosed above, with the exception of at least two alignment devices adjacent one of the side walls and attaching a TAB circuit to the semiconductor substrates.

Ta et al. teaches an ink jet cartridge having a plurality of lands (74, 78, 80) for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al. It would have been an obvious matter of design choice to position the alignment devices adjacent to the side walls.

Keefe et al. discloses an ink jet print cartridge comprising a TAB circuit (18) which cover a printer cartridge headland (50) for the purpose of providing electrical connections in a known alternative manner. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, a TAB circuit, as taught by Keefe et al., for the purpose of providing electrical connections in a known alternative manner.

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8. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Keefe et al. (5,278,584), as applied to claims 14-18 above, and further in view of Wenzel et al. (5,426,458).

See rejection of claims 6 and 7, above.

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Keefe et al. (5,278,584), as applied to claims 14-18 above, and further in view of Drake et al. (5,079,189).

See rejection of claim 8, above.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Keefe et al. (5,278,584), as applied to claims 14-18 above, and further in view of Cook (5,834,689).

See rejection of claim 8, above.

11. Claims 25-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Wong (5,084,713).

Braun teaches the claimed invention, as disclosed above, with the exception of at least two alignment devices and a plurality of slots for attaching the nose piece to the reservoir.

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Ta et al. teaches an ink jet cartridge having a plurality of lands (74, 78, 80) for the purpose of aligning the cartridge in the carriage. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al. It would have been an obvious matter of design choice to position the alignment devices adjacent to the side walls.

Wong discloses an ink jet print head comprising a substrate support panel (50) having a recess (48) for accommodating and cooling a semi-conductor substrate (12). As can be seen in Fig. 8, the support panel has a top surface and side walls which define a cylindrical first opening (100) which is located opposite the top surface. Plastic alignment pins are provided adjacent the side walls for attaching the panel to holes in a plastic ink cartridge (10) which is positioned adjacent to the support panel. It would have been obvious to one of ordinary skill in the art to provide the cylindrical first openings (100) around the perimeters of the side walls and the plastic alignment pins on the support panel, since it has been held that rearranging the parts of an invention involves only routine skill in the art. This would suggest to one of ordinary skill in the art to provide in Braun, as modified, slots along the perimeter of the side walls for the purpose of attaching the fluid block to the ink reservoir. Furthermore, it would have been obvious to one of ordinary skill in the art to make the carrier removable from the ink reservoir to allow replacement of the ink reservoir with necessitating the replacement of the carrier.

The other cited references have been discussed above.

12. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421), Ta et al. (4,755,836) and Wong, as applied to claims 25-28 and 31 above, and further in view of Wenzel et al. (5,426,458).

See rejection of claims 6, 7, 19 and 20, above.

13. Claims 32-35, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421) and Keefe et al. (5,278,584).

Braun discloses the claimed invention, as above, with the exception of at least one of sides of the substrate carrier having a substantially planar surface extending from the substrate surface essentially perpendicular there to for containing contact pads, and at least two of the four side containing cooling fins.

Hara et al. discloses the claimed invention as above. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provided additional cooling fins on different sides of the substrate carrier, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. v. Bemis Co., 193 USPQ 8).

Keefe et al. discloses an ink jet print cartridge comprising a TAB circuit (18) which cover a printer cartridge headland (50). As can be seen in Fig. 6, the TAB circuit, having electrical contact pads (20), extends along the sides of the cartridge so that it is generally perpendicular to the substrate for the purpose of providing electrical connections in a known alternative manner. It would have been obvious to one of

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ordinary skill in the art at the time the invention was made to have provided in Braun, as modified, a TAB circuit as disclosed by Keefe et al. for the purpose of providing electrical connections in a known alternative manner.

Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (4,942,408) in view of Fukuda et al. (5,066,964), Hara et al. (4,296,421) and Keefe et al. (5,278,584), as applied to claims 32-35, 38 and 39, and further in view of Wenzel et al.

See rejection of claims 6, 7, 19, 20, 29 and 30 above.

Response to Arguments

14. Applicant's arguments with respect to claims 1-22 and 25-39 have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant's arguments with respect to Wong are deemed to be addressed in the new grounds of rejection. Applicant states that their arguments against the other references, presented in the amendment dated 03/27/00 are maintained. The Examiner's response to these arguments presented in the Office Action dated 05/04/00 are also maintained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on 6:30-300 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 308-3126. The fax phone numbers for

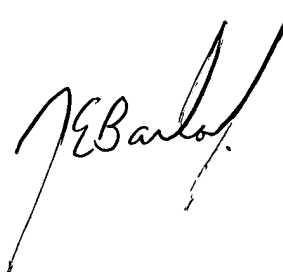
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the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Michael S. Brooke
August 4, 2000



John Barlow
Supervisory Patent Examiner
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